

# Chapter 29 GRINDERS AND SHARPENING STONES

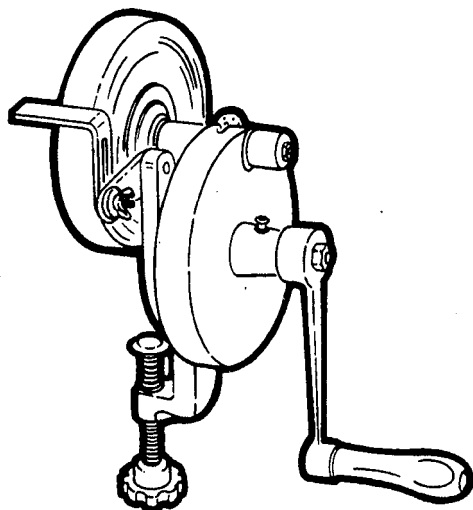
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## HOW TO CHOOSE AND USE THEM

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The "Types and Uses" section provides you with a list of some of the types of grinders and sharpening stones. These pages should help you select the right sharpening instrument to do the job.

The "Using" section tells you how to use the sharpening instrument to perform the desired function. The "Care" procedures tell you how to care for the items.



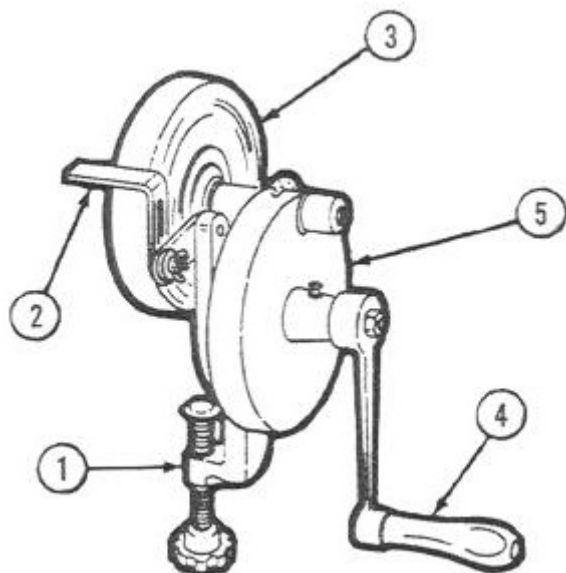
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## TYPES AND USES

Grinders are mechanical devices which allow you to reshape, form, and sharpen metal cutting tools or other tools. A grinder consists of an abrasive wheel mounted on a rotatable shaft. The abrasive wheels are available in varying degrees of coarseness, depending upon type of metal to be ground. Sharpening stones may be either natural or artificial. Natural stones are of a finer grain than the artificial stones.

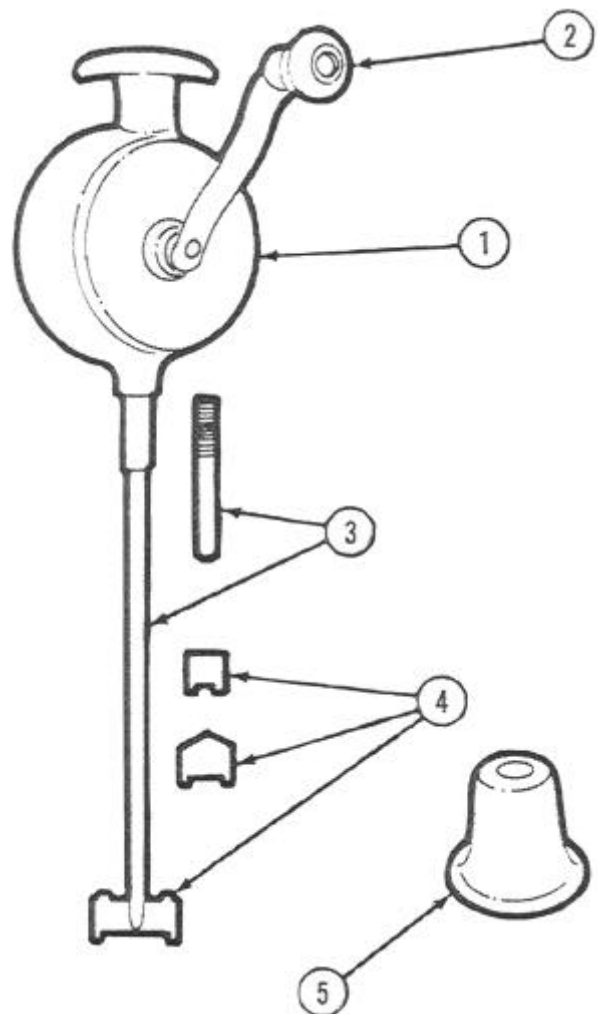
### BENCH GRINDER



Bench grinders are used for reshaping and sharpening chisels, drills, hatchets, and other similar small hand tools.

The bench grinder consists of a clamp (1), a rest (2), an abrasive wheel (3), a handcrank (4), and an encased gearing assembly (5). The clamp is used for fastening the grinder to a working surface. The rest supports tools which are being ground. It is adjustable and may be moved from side to side. The abrasive wheel may be changed depending upon the type of metal being ground.

### VALVE GRINDER

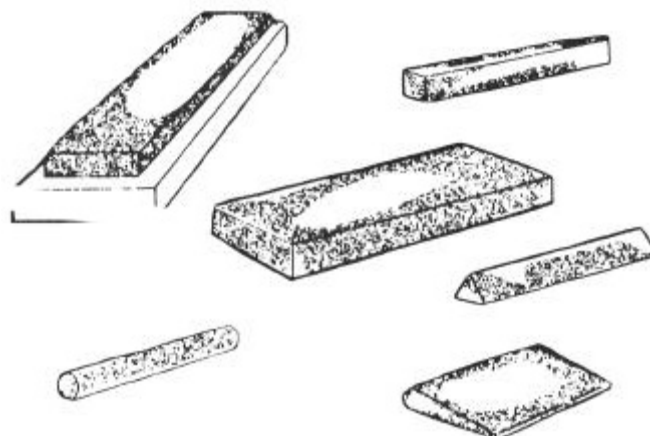


The valve grinder is a hand-operated special grinder. It is used for grinding the valve seating surfaces on combustion engines. It grinds with cutting blades on a rotating shaft instead of an abrasive wheel. It consists of an encased gear housing (1), a handcrank (2), inter-changeable shafts (3), cutting blades (4), and a suction cup (5). The suction cup is used in place of a blade to grind non-slotted valves to fit seating surfaces.

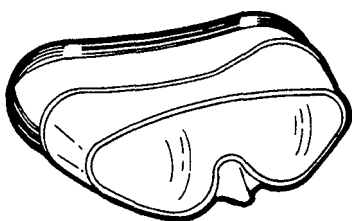
## TYPES AND USES - Continued

### SHARPENING STONES

Sharpening stones usually have one coarse face and one fine face. This could combine the coarse artificial stone with the fine natural stone. The coarse edge is used to remove nicks and to reshape the tool being sharpened. The fine edge is used to complete the sharpening process and put a keen edge on the tool. Sharpening stones are available in various shapes and sizes, as shown.



## USING A BENCH GRINDER



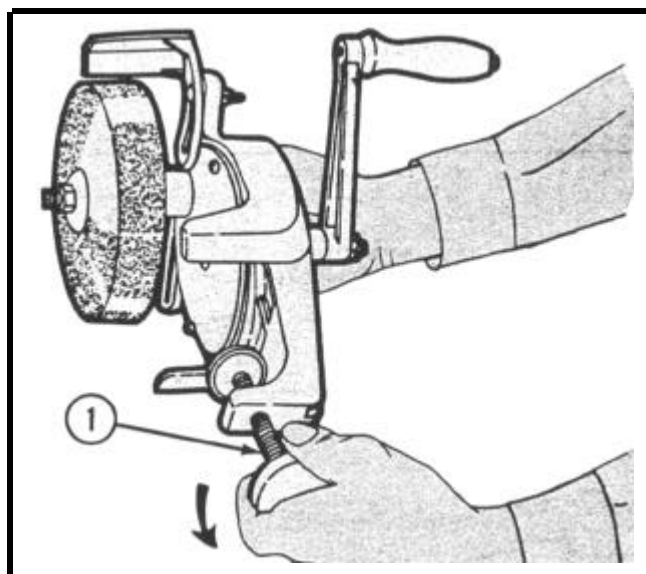
### WARNING

WEAR EYE PROTECTION AND WATCH THE FINGERS.

HOLD TOOLS BEING SHAPED FIRMLY, SO THEY WILL NOT CATCH IN ABRASIVE WHEEL AND CAUSE INJURY.

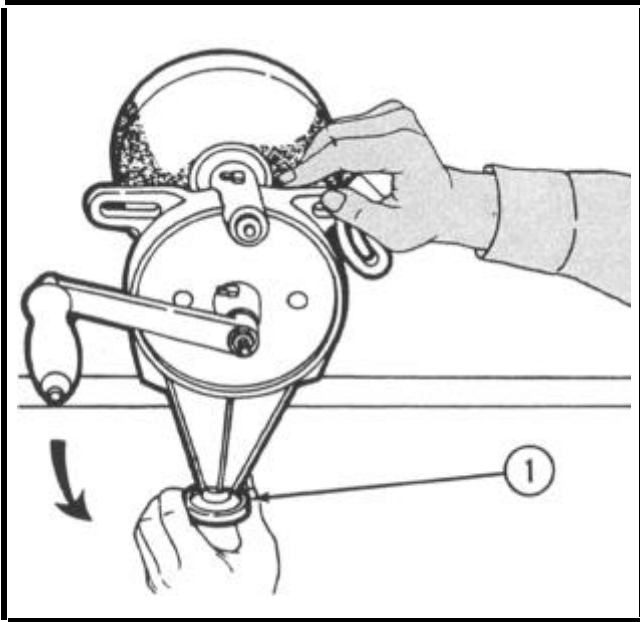
### CAUTION

Never use a cracked wheel. Before using a wheel, tap it lightly with a mallet. A ringing sound indicates that the wheel is satisfactory; a dull sound indicates that the wheel may be cracked.

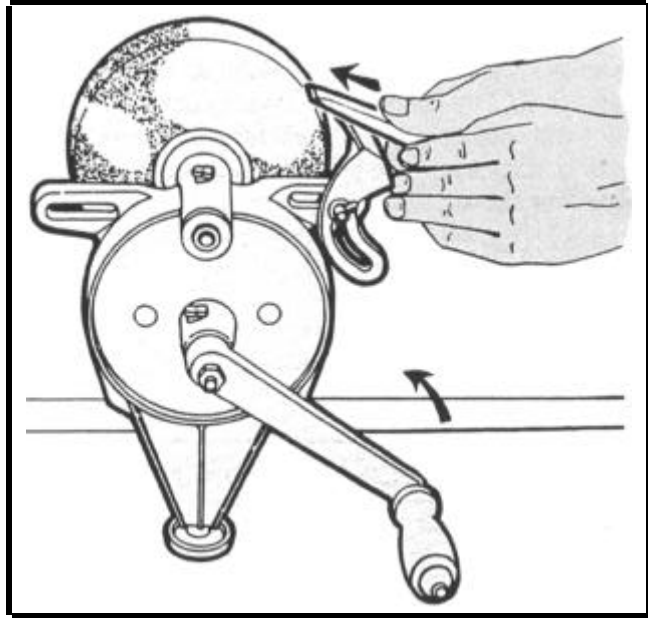


- 1 Before using, inspect the grinder and abrasive wheel, checking for cracks or breaks on exposed surfaces.
- 2 Unscrew the mounting clamp (1) to allow the grinder to be positioned on the bench.

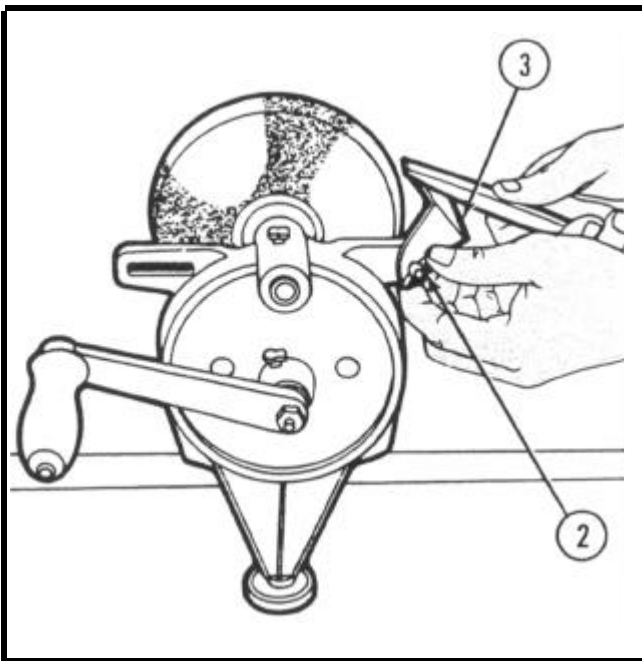
## USING A BENCH GRINDER - Continued



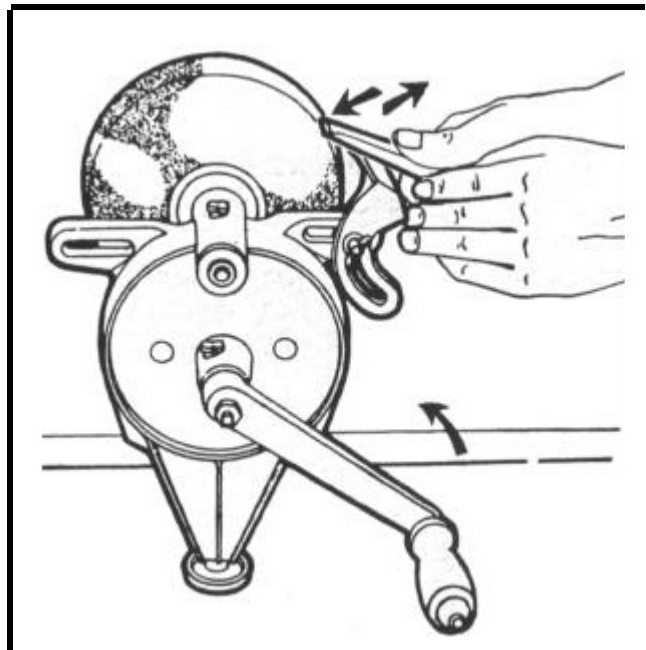
- 3** Position grinder where it will be used and tighten the mounting clamp (1) to hold securely on the bench.



- 6** Rotate the handcrank and move the tool forward until it makes contact with the wheel.

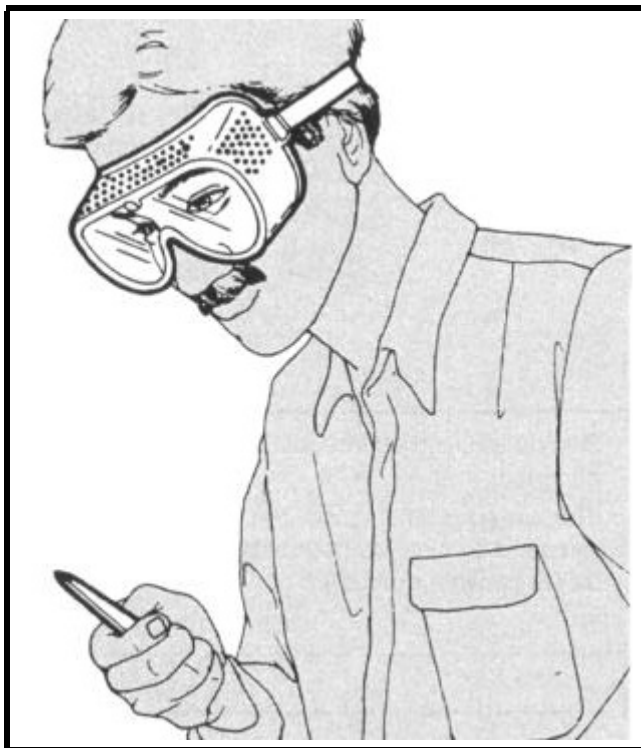


- 1** Loosen the wing nut (2) on the rest (3). Adjust the rest (3). Tighten the wing nut (2).  
**2** Support the tool to be ground on the rest (3).

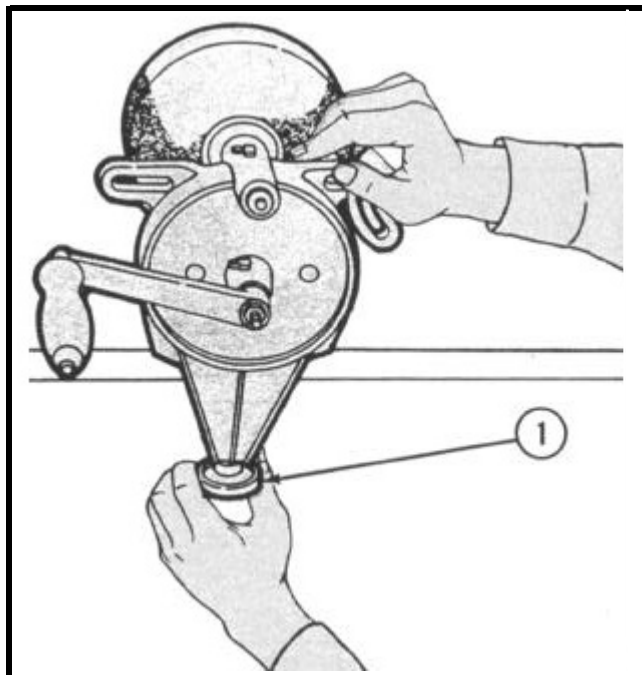


- 7** Move the tool back and forth across the abrasive wheel face to be sure of an evenly ground surface.

## USING A BENCH GRINDER - Continued



- 8** Stop grinding occasionally to check for the desired edge.

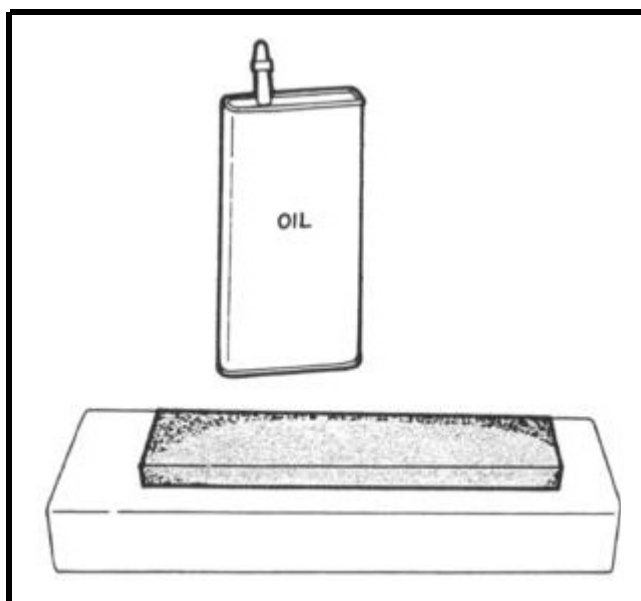


- 9** When the desired edge is obtained, you are finished. Remove grinder from bench by loosening the clamp (1). Store grinder in its designated storage area.

## USING A SHARPENING STONE

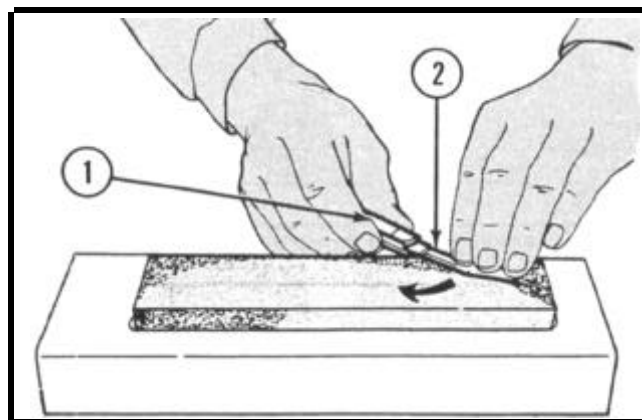
### NOTE

Unless stone is already oil-impregnated, apply a light coat of oil before and during use.



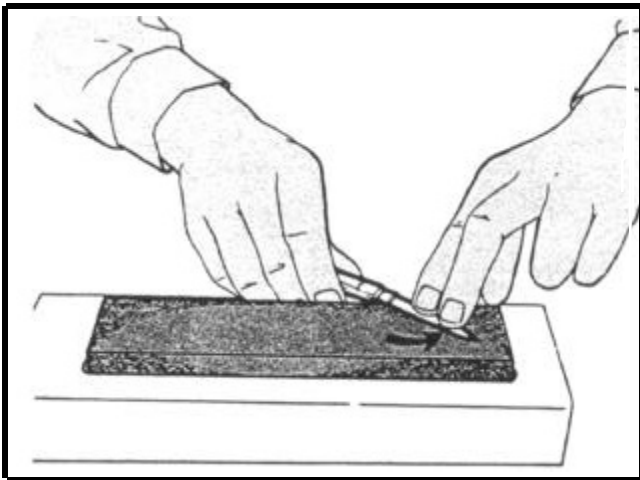
### WARNING

KEEP YOUR FINGERS CLEAR OF THE HINGE AREA OF A POCKET KNIFE.

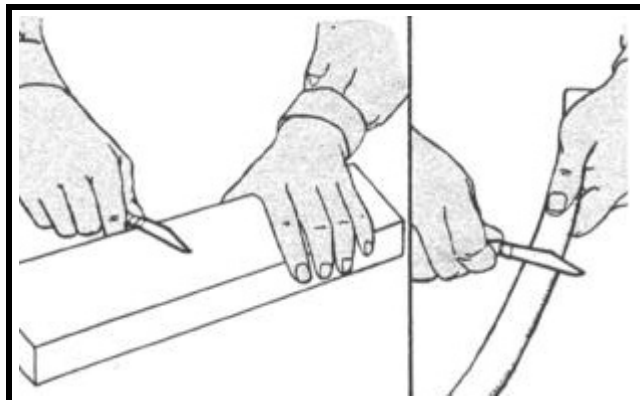


- 1** Hold the handle (1) of the blade to be sharpened in one hand and extend the blade (2) across the stone.
- 2** Press down on the blade with the fingers of the other hand.
- 3** With a circular motion, stroke the blade with the sharp edge trailing.

## USING A SHARPENING STONE - Continued

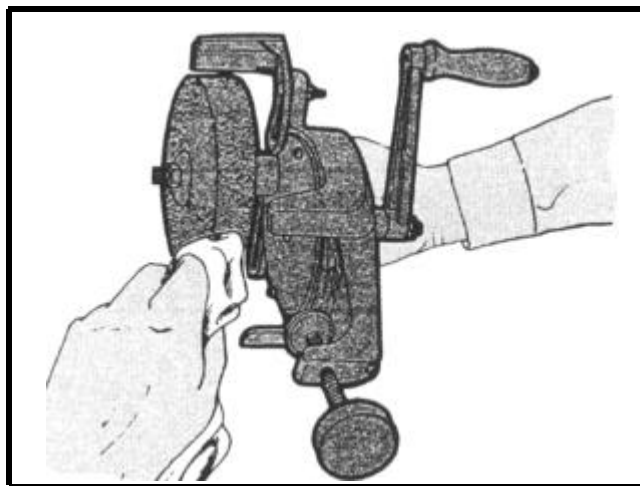


- 4 After several strokes, reverse the blade and stroke the other side in a similar manner. Use light, even pressure.



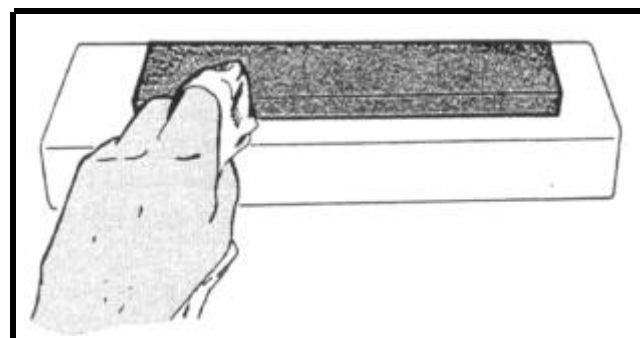
- 5 Repeat stroking action until the desired edge is obtained.
- 6 The wire edge left on blade by using a stone may be removed by stroking both sides on a soft wood block, canvas, or leather.

## CARE OF BENCH GRINDERS



1. Wipe oil and grease from all outside surfaces before and after each use.
2. Tighten all housing screws before and after each use.
3. Before using, check to be sure that the abrasive wheel is not cracked or broken.

## CARE OF SHARPENING STONES



1. Prevent glazing of stone by applying light oil while using.
2. Wipe excess oil and grit from stone with a clean rag after each use.
3. Clean stone with dry cleaning solvent when it becomes glazed or gummed up.
4. Store in a clean dry place and/or wrap in clean cloth.